

ABSTRACT

A high-speed directly modulated semiconductor laser device and a preparation method therefor. The semiconductor laser device comprises an optical waveguide (1) and an optical grating (2), which is formed by means of a one-step etching process, wherein the optical grating (2) comprises a first optical grating portion (21) and a second optical grating portion (22), which are arranged side by side. The first optical grating portion (21) and the second optical grating portion (22) can effectively control a lasing wavelength and a photon-photon resonance frequency, and generate a load mismatch resonance effect, such that a relatively high yield can be realized while effectively improving the modulation bandwidth of the directly modulated semiconductor laser device, and an FP cavity is prevented from being formed from the reflection of front and rear end faces of the laser device, and thus multi-longitudinal-mode oscillation generated by the laser device at a high temperature or low temperature is prevented.

FIG. 3